

## Emergency visits of otorhinolaryngology department during COVID-19 pandemic, Saudi Arabia, 2020

Emergency cases visiting otorhinolaryngology (ORL) department during COVID-19 pandemic

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### Abstract

**Aim:** In this study, we aimed to assess the frequency of patient emergency visits to the Otorhinolaryngology (ORL) Department during coronavirus COVID-19 pandemic and compare it with that before coronavirus COVID-19.

**Material and Methods:** A retrospective comparative study was performed at Al-Al-Hada Armed Forces Hospital, Taif (Saudi Arabia), and data regarding various diagnoses of ORL cases were collected from medical records of patients who visited/admitted to ORL-ED during the lockdown (Group 1) and those who visited/admitted to ORL-ED before the pandemic (Group 2).

**Results:** Group 2 had a significantly higher percentage of cases who had no ENT-related disorders, hypertrophy inferior turbinate (HIT), stridor, obstructive sleep apnea (OSA), epistaxis and who had no complications, had general ENT, foreign body ingestion-aspiration, trauma, otology and who had more than one disorder and Group 1 had a significantly higher percentage of those having nasal obstruction, tonsil hypertrophy grade 3, had emergency head and neck cancer, had deep neck space infections and who had complicated.

**Discussion:** During coronavirus COVID-19 pandemic period, cold ENT visits were much less and foreign body ingestion remains the highest reason for ENT visits. Additionally, telemedicine has been shown to be effective in reducing ED visits during the pandemic period. Furthermore, older cases with chronic ENT problems who had regular follow-up ENT visits were less likely to visit ED during the pandemic.

### Keywords

Emergency, Cases, Otorhinolaryngology, COVID-19, Pandemic, Taif

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## Introduction

In March 2020, the World Health Organization (WHO) confirmed the outbreak of severe acute respiratory syndrome caused by coronavirus 2 (SARS-CoV-2) as a global pandemic and called it COVID-19; at that time, there were no clear therapies and vaccines available for disease control [1]. Consequently, health systems and medical centers were challenged by an emergency and disorganization [2].

COVID-19 created a burden in terms of complications that occurred directly during the crisis and lasted over a period of time [3]. However, it is clearly difficult to eliminate the disease, and the primary task is to maintain the situation under control [4]. Thus far, hospitals have decided to suspend all elective and referable procedures for both surgery and outpatient clinic visits [5]. Some clinical specialties were more vulnerable to serious problems owing to the organization of patient care [4]. Emergency care is an important department of any medical center [6]. During the COVID-19 pandemic, many governments implemented a lockdown and self-quarantine to counteract the outbreak of infection and decrease emergency visits during the COVID-19 pandemic [5]. In England, emergency department visits decreased by 49% [5, 7], and 50.2% of overall patient visits during this period were for endodontic treatment [8].

Otorhinolaryngology (ORL) Department is one of the specialties where urgent consultations are held. Patients attendance dropped significantly within the month following the onset of the COVID-19 pandemic, and many illnesses disappeared [9]. ORL emergencies are common among communities, and early diagnosis and management are important to reduce morbidity and mortality [10]. The head and neck perform multiple functions in critical areas of human health (including respiration, digestion, sensation, communication, and aesthetics) that can be threatened by ORL emergencies [11]. During an emergency, management priorities should focus on airways, breathing, circulation, and disability to decrease morbidity and mortality (American Academy of Otolaryngology Head and Neck Surgery Foundation. Primary care otolaryngology. 2011. Available at: <https://www.entnet.org/wp-content/uploads/files/Oto-Primary-Care-WEB.pdf>). ORL emergencies include: foreign bodies in the aero-digestive tract, deep neck space infections, epistaxis, and laryngotracheal trauma [12]. Obviously, foreign bodies in the aero-digestive tract are the most common emergency and require immediate intervention [6].

A previous study showed that there was a total reduction in ORL emergency visits by 73% during the COVID-19 pandemic [13]. Patients with general ORL symptoms (e.g., mild cases of epistaxis, cases of otology, cases of vertigo, uncomplicated cases of infection) showed statistically significant numbers and were empirically handled. There was no statistical decrease in swallowing cases of foreign bodies [13].

Specific strict measures were taken by the American Academy of Otolaryngology-Head and Neck Surgery (AAOHN) during the COVID-19 pandemic, which included cancellation of all elective cases, converting all tracheotomies to percutaneous routes, keeping patients intubated for up to three weeks, limiting the OR personnel with teams involved in cases of suspected COVID patients, and all clinic patients had their follow-ups rescheduled or were offered telemedicine visits [14].

Very few studies have been performed to assess the ORL emergency visits in the world during the COVID-19 pandemic, and no study has been done in Saudi Arabia to assess this issue. Thus, this study aimed to find out the number of patients who visit the ORL Emergency Department during the COVID-19 pandemic, and compare it with that before coronavirus COVID-19 and assess its relationship to types of emergencies.

## Material and Methods

**Study design:** A retrospective comparative study was conducted in Al-Hada Armed Forces Hospital.

**Study population:** The data were collected retrospectively about patients visited or admitted to the emergency ORL department.

### Ethical approval

Ethical approval for the study was obtained from Al-Hada Armed Forces Hospital research ethical committee on 12 August 2020. Register number H-02-T-078. Reference REC.T. 2020-08-468.

**Data collection:** The data were collected from medical records of patients of all ages who visited or admitted to the emergency ORL department during the period of nationwide lockdown from February 2020 to May 2020 (Group 1), and from those visited or admitted to the same setting before the pandemic from October 2019 to January 2020 (Group 2). The exclusion criteria were all patients who visited the emergency department related to another specialty other than ORL and any patient diagnosed with a somatic disorder. Patients were classified into 9 ENT categories, according to the cause of a visit to the ORL emergency department (General ORL, foreign body ingestion-aspiration, trauma, vertigo, epistaxis, otology, emergency head and neck Cancer (including hemorrhage and airway compromise), deep neck infections, including supraglottic, and sialadenitis as well as insecure airway cases), and those having problems other than ENT.

**Statistical analysis:** Data were analyzed using (SPSS) version 25. Qualitative data were expressed as numbers and percentages, and the Chi-squared test ( $\chi^2$ ) was applied to check the between variables. Quantitative data were expressed as mean and standard deviation (Mean  $\pm$  SD), and the Mann-Whitney test was applied for non-parametric variables. A p-value of  $<0.05$  was considered statistically significant.

## Results

Table 1 shows that the mean age of the participants was 31.93  $\pm$  18.24 years, and 64.9% were emergency cases who visited the Otorhinolaryngology (ORL) Department from October 2019 to January 2020. Of studied patients, 82% had more than one ENT disorder, and 5.9% had chronic tonsillitis as a risk factor related to the condition.

Table 2 shows that 97.7% of patients were admitted through the emergency department, 46.8% were known cases of any ENT diseases, and 66.7% had no medical or surgical history. Of them, 76.1% came with no complications and 8.6% came with nasal obstruction.

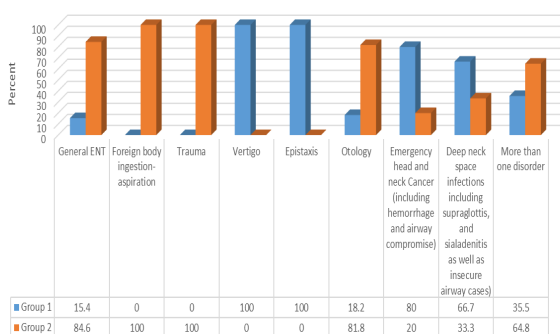
(Table 3) demonstrated that group 2 had a significant higher percent of those who had no ENT-related disorders, and who had no past medical or surgical history ( $p \leq 0.05$ ). Group 1 had a significant higher percent of those who had nasal obstruction and tonsil hypertrophy grade 3 as a complication the patient

came with compared to group 2. While group 2 had a significant higher percent of those who had hypertrophy inferior turbinate (HIT), stridor, obstructive sleep apnea (OSA), epistaxis and who had no complications compared to group 1 ( $p \leq 0.05$ ).

Figure 1 illustrated that Group 2 had a significantly higher percentage of patients with General ENT, foreign body

**Table 1.** Distribution of studied patients according to their characters, ENT category related to the admitted case, and risk factors related to the condition (No.=222)

Variable	No. (%)
Age (mean ± SD)	31.93 ± 18.24
Gender	
Male	110 (49.5)
Female	112 (50.5)
Groups	
Group1	78 (35.1)
Group 2	144 (64.9)
ENT category related to the admitted case	
General ENT	13 (5.9)
Foreign body ingestion-aspiration	1 (0.5)
Trauma	2 (0.9)
Vertigo	1 (0.5)
Epistaxis	1 (0.5)
Otology	11 (5)
Emergency head and neck Cancer (including hemorrhage and airway compromise)	5 (2.3)
Deep neck space infections including supraglottis, and sialadenitis as well as insecure airway cases)	6 (2.7)
More than one disorder	183 (82)
Risk factors related to the condition	
DNS (deviated nasal septum)	3 (1.4)
DM	1 (0.5)
chronic tonsillitis	13 (5.9)
URTI	11 (5)
allergic rhinitis	12 (5.4)
hearing impairment	3 (1.4)
trauma	7 (2.3)
epistaxis	1 (0.5)
acute or chronic sinusitis	5 (2.3)
OME (otitis media with effusion)	2 (0.9)
More than one risk factor	1 (0.5)
None	163 (73.4)



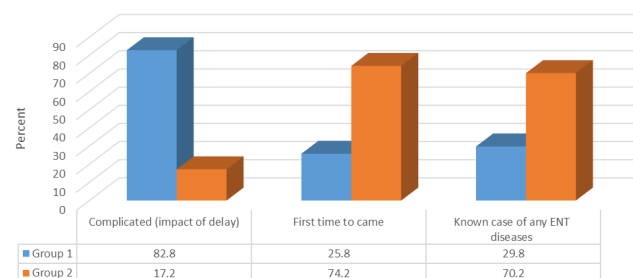
**Figure 1.** Relationship between patient groups and their ENT category related to the admitted case  
N.B.: ( $\chi^2=15.96$ ,  $p\text{-value}=0.04$ )

ingestion-aspiration, trauma, otology and who had more than one disorder ( $p \leq 0.05$ ), while Group 1 had a significantly higher percentage of patients who had emergency head and neck cancer (including hemorrhage and airway compromise), and who had deep neck space infections, including supraglottic, and sialadenitis as well as insecure airway cases) ( $p \leq 0.05$ ).

Figure 2 illustrated that Group 1 had a significantly higher percentage of patients who were complicated cases compared to Group 2 ( $p \leq 0.05$ ).

**Table 2.** Distribution of studied patients according to their admission way, their condition, past medical and surgical history and complications the patient came with (No.=222)

Variable	No. (%)
Patient admission way	
Emergency Department	217 (97.7)
Outpatient department	5 (2.3)
The patient's condition	
Complicated (impact of delay)	29 (13.1)
First time visit	89 (40.1)
Known case of any ENT diseases	104 (46.8)
Past medical & Surgical history	
DM	12 (5.4)
Asthma	5 (2.3)
HTN	14 (6.3)
Rhinitis	7 (3.2)
Hearing impairment	6 (2.7)
Thyroid disorder	11 (5)
Epilepsy	2 (0.9)
Kidney disorder	1 (0.5)
More than one medical problem	16 (7.2)
None	148 (66.7)
Complications the patient came with	
Tonsil grade 3	11 (5)
HIT	5 (2.3)
Stridor	3 (1.4)
Nasal obstruction	19 (8.6)
OSA	3 (1.40)
Hearing impairment	2 (0.9)
Orbital encephalocele	1 (0.5)
Epistaxis	5 (2.3)
Neoplasm of thyroid	4 (1.8)
No complications	169 (76.1)



**Figure 2.** Relationship between patient groups and patient conditions  
N.B.: ( $\chi^2=33.52$ ,  $p\text{-value} \leq 0.001$ )

**Table 3.** Relationship between patients’ groups and risk factors related to the condition, past medical and surgical history and complications the patient came with

Variable	Group 1 No. (%)	Group 2 No. (%)	$\chi^2$	P value		
<b>Risk factors related to the condition</b>						
DNS (deviated nasal septum)	0 (0.0)	3 (100)	22.5**	0.02		
DM	1 (100)	0 (0.0)				
Chronic tonsillitis	0 (0.0)	13 (100)				
URTI	5 (45.5)	6 (54.5)				
Allergic rhinitis	3 (25)	9 (75)				
Hearing impairment	0 (0.0)	3 (100)				
Trauma	1 (14.3)	6 (85.7)				
Epistaxis	0 (0.0)	1 (100)				
Acute or chronic sinusitis	0 (0.0)	5 (100)				
OME (otitis media with effusion)	0 (0.0)	2 (100)				
More than one risk factor	0 (0.0)	1 (100)				
None	68 (41.7)	95 (58.3)				
<b>Past medical &amp; Surgical history</b>						
DM	5 (41.7)	7 (58.3)			27.22**	0.001
Asthma	5 (100)	0 (0.0)				
HTN	4 (28.6)	10 (71.4)				
Rhinitis	5 (71.4)	2 (28.6)				
Hearing impairment	5 (83.3)	1 (16.7)				
Thyroid disorder	6 (54.4)	5 (45.5)				
Epilepsy	1 (50)	1 (50)				
Kidney disorder	0 (0.0)	1 (100)				
More than one medical problem	7 (43.8)	9 (56.3)				
None	40 (27)	108 (73)				
<b>Complications the patient came with</b>						
Tonsil grade 3	8 (72.7)	3 (27.3)	22.15**	0.008		
HIT	2 (40)	3 (60)				
Stridor	1 (33.3)	2 (66.7)				
Nasal obstruction	10 (52.6)	9 (47.4)				
OSA	1 (33.3)	2 (66.7)				
Hearing impairment	1 (50)	1 (50)				
Orbital encephalocele	1 (100)	0 (0.0)				
Epistaxis	1 (20)	4 (80)				
Neoplasm of thyroid	4 (100)	0 (0.0)				
No complications	59 (29)	120 (71)				

**Discussion**

During four months of the national lockdown owing to COVID-19, there was a 46% decrease in the number of ORL emergency department visits compared to the same period of the previous year. The reduction in trauma is due to the implemented measures taken during the lockdown. In addition, multiple patients may prefer to manage non-urgent conditions on their own or by remote communication with their otolaryngologists. In agreement with this, a recent study has documented a substantial decrease in ORL emergency consultations by 80.8% [9].

According to our study, most of the participants who attended the ORL emergency department had more than one ENT disorder that required urgent intervention, and epistaxis showed the most significant reduction. A study performed in northern Italy during the COVID-19 pandemic also showed that epistaxis had the highest reduction in the number of cases compared to

previous years [5].

Epistaxis is reported to account for only 0.5% of all emergency department visits and up to one-third of all otolaryngology-related emergency department encounters. Inpatient hospitalization for aggressive treatment of severe nosebleeds has been reported in 0.2% of patients with nosebleeds [15].

In terms of admission, most cases were admitted through the emergency department, and there were fewer cases in the outpatient department. Therefore, a significant increase in the number of patients attending otorhinolaryngology department can be expected in the coming months that will require proper management. Most of the cases were known cases of ENT diseases; we speculate that this may be due to fear of contracting the virus. The same was recognized in a study performed in Italy; during the COVID-19 pandemic, only Emergency Department consultations were guaranteed in the ENT Department [5].

The results of this study revealed an overall reduction in the number of ORL emergency consultations during the pandemic. Another study observed the same reduction (by 80.8%) in the number of emergency visits during the nationwide lockdown from February 2020 to April 2020 [9].

This study determined that Group 1 had a significantly higher percentage of patients with comorbidities (e.g., HTN, DM, and thyroid disorders) and cancers compared to Group 2. This can be explained by the lockdown and governmental limitations, which were implemented to reduce infection transmission. In addition, the obtained results can be attributed to patients’ fear of contacting the COVID-19 infection because they are more susceptible to it than other people. Initial reports stated that coronavirus may be particularly dangerous for certain risk groups (e.g., people with chronic diseases), which forced people to adjust their risk perception and worries related to such information (WHO Director-General’s opening remarks at the media briefing on COVID-19 - 11 March 2020. Available at: <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020>).

During the nationwide lockdown, the number of visits or admitted cases with conditions related to ORL (e.g., deviated nasal septum, chronic tonsillitis, allergic rhinitis, otitis media, and URTI) decreased. A study performed in Italy showed that the reduction was in the range of 80.2–88.9% under the same conditions during the period of nationwide lockdown [9]. In a previous study [9], there was a large unexplained reduction in epistaxis by 80.2%; while this study showed a 75% decrease in epistaxis during the pandemic.

In this study, patients from Group 1 accounted for a significantly higher percentage of those who had complications of tonsil hypertrophy grade 3 and neoplasm of the thyroid. The same was reported in a previous study performed in Greece, where patients with general ENT symptoms, mild epistaxis cases, otology cases, vertigo cases, and uncomplicated infectious cases showed a statistically significant reduction in the number of cases and were treated empirically [13].

When comparing emergency visits before and during the COVID-19 pandemic, we determined that most complaints during the ENT emergency visits prior to the COVID-19 pandemic were

related to vertigo, epistaxis, head and neck emergency cancer, including hemorrhage and compromised airways. In contrast, during the COVID-19 pandemic, most visits were due to foreign body aspiration, trauma, and otology. Surprisingly, there was a reduction in head and neck emergency cancer cases. A similar study performed in Greece in 2020 showed that patients with general symptoms of ENT, mild cases of epistaxis, cases of otology, cases of vertigo, and uncomplicated infection cases showed a significant reduction, while there was no reduction in the foreign body aspiration cases [13].

Previous studies have determined that, regarding trauma cases, the lockdown was responsible for the reduction in these cases. Other reports revealed that there was a significant decrease in visits to emergency trauma departments [7]. Other studies reported lower volumes of trauma and injury cases caused by fights, vehicle accidents, ladder accidents, or incidents at work, school, and sport [16].

We believe that the different causes of emergency visits were present in each studied group. Firstly, during the pandemic, the symptoms of vertigo and mild epistaxis can be managed at home or telehealth, so in these cases, we noted a further reduction. Saudi Arabia (SA) experienced the use of telemedicine services during the previous epidemic of the Middle East respiratory syndrome (MERS) in 2012 [17,18]. During the COVID-19 pandemic, telemedicine through mobile applications has found effective tools to facilitate delivering healthcare to patients [19,20].

#### Limitations

The limitation of the present study is the cross-sectional nature that could assess the associations between variables without revealing the causal relationships.

#### Conclusion

During the COVID-19 pandemic period, cold ENT visits were much less, and foreign body ingestion remains the main reason for ENT visits. Additionally, the effectiveness of telemedicine in reducing ED visits during the pandemic period has been proved. Furthermore, older cases with chronic ENT problems who had regular follow-up ENT visits were less likely to visit ED during the pandemic.

#### Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

#### Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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#### Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

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